CLAIMS:

What is claimed is:

1. A radiation emitting apparatus, comprising:

a fiber optic end;

an energy-distribution tuner coupled to the fiber optic end; and

a bundled fiberguide or waveguide coupled to the energy-distribution tuner and being constructed to direct energy emitted from the energy-distribution tuner in a direction away from the radiation emitting apparatus and toward a treatment site.

2. The radiation emitting apparatus as set forth in claim 1, wherein the energy-distribution tuner comprises a cylindrical reflector.

3. The radiation emitting apparatus as set forth in claim 1, wherein the bundled fiberguide or waveguide comprises a coherent tapered fused fiber.

4. The radiation emitting apparatus as set forth in claim 1, wherein:

the energy-distribution tuner comprises a cylindrical reflector; and

the fiber optic end is centered to emit energy through the cylindrical reflector.

5. The radiation emitting apparatus as set forth in claim 4, wherein a longitudinal center axis of the cylindrical reflector is aligned with a longitudinal center axis of the fiber optic end.

6. The radiation emitting apparatus as set forth in claim 5, wherein the radiation emitting apparatus is disposed within a handpiece.

7. The radiation emitting apparatus as set forth in claim 1, wherein the bundled fiberguide or waveguide is coupled to the energy-distribution tuner to receive a

uniform distribution of high power energy therefrom, and is configured to emit a substantially uniform distribution of energy having a lower power than received from the energy distribution tuner.

8. The radiation emitting apparatus as set forth in claim 1, wherein the bundled fiberguide or waveguide is configured to emit a substantially uniform distribution of energy from an irregularly shaped output end.

9. The radiation emitting apparatus as set forth in claim 8, wherein the irregularly shaped output end includes a curved surface having a non-circular cross-section.

10. The radiation emitting apparatus as set forth in claim 1, wherein the bundled fiberguide or waveguide includes a plurality of fused optic fibers.

11. The radiation emitting apparatus as set forth in claim 1, wherein the bundled fiberguide or waveguide includes a plurality or beam-splitting mirror elements.

12. The radiation emitting apparatus as set forth in claim 1, wherein the bundled fiberguide or waveguide includes a plurality of tapered waveguides.

13. A radiation emitting apparatus, comprising:

an energy distributor; and

a bundled fiberguide or waveguide including an elongate body with a first end having a first cross-sectional area, and a second end having a second cross-sectional area that is different than the first cross-sectional area, the second end including a curved surface for emitting energy received from the energy distributor toward a target surface.

14. The radiation emitting apparatus as set forth in claim 13, wherein the bundled fiberguide or waveguide includes a tapered elongate body.

15. The radiation emitting apparatus as set forth in claim 13, wherein the first end of the elongate body is coupled to the energy distributor.

16. The radiation emitting apparatus as set forth in claim 13, wherein the bundled fiberguide or waveguide includes an energy directing member selected from the group consisting of fused optical fibers, beam splitting mirror elements, and tapered waveguides.

17. The radiation emitting apparatus as set forth in claim 13, wherein the curved surface has a substantially rectangular cross-sectional configuration.

18. The radiation emitting apparatus as set forth in claim 13, wherein:
the radiation emitting apparatus further comprises an end of a quartz fiber;
the energy distributor is a cylindrical reflector; and
the bundled fiberguide or waveguide includes a reflective interior surface.

19. The radiation emitting apparatus as set forth in claim 13, wherein the energy distributor is an energy distribution tuner.

20. The radiation emitting apparatus as set forth in claim 1, wherein the bundled fiberguide or waveguide includes an elongate body with a first end having a first cross-sectional area and a second end having a second cross-sectional area that is different than the first cross-sectional area, the second end including a curved surface for emitting energy received from the energy distribution tuner toward a target surface.

21. A method of exposing a target surface to radiation, comprising:
reflecting radiation in an energy distributor to generate a substantially uniform distribution of the radiation at an output surface of the energy distributor, the substantially uniformly distributed radiation having a first power; and
directing the substantially uniformly distributed radiation through a bundled fiberguide or waveguide to form a substantially uniform distribution of radiation having a

second power that is substantially less than the first power whereby the substantially uniform distribution of radiation having the second power is directed toward a target surface.

22. The method as set forth in claim 21, wherein the energy distributor is an energy distribution tuner.

23. The method as set forth in claim 21, wherein the reflecting is preceded by directing radiation from a fiber optic end toward the energy distribution tuner.

24. The method as set forth in claim 21, wherein the radiation is directed toward a surface of a patient.

25. The method as set forth in claim 21, wherein the radiation is directed toward a dental surface of a patient.